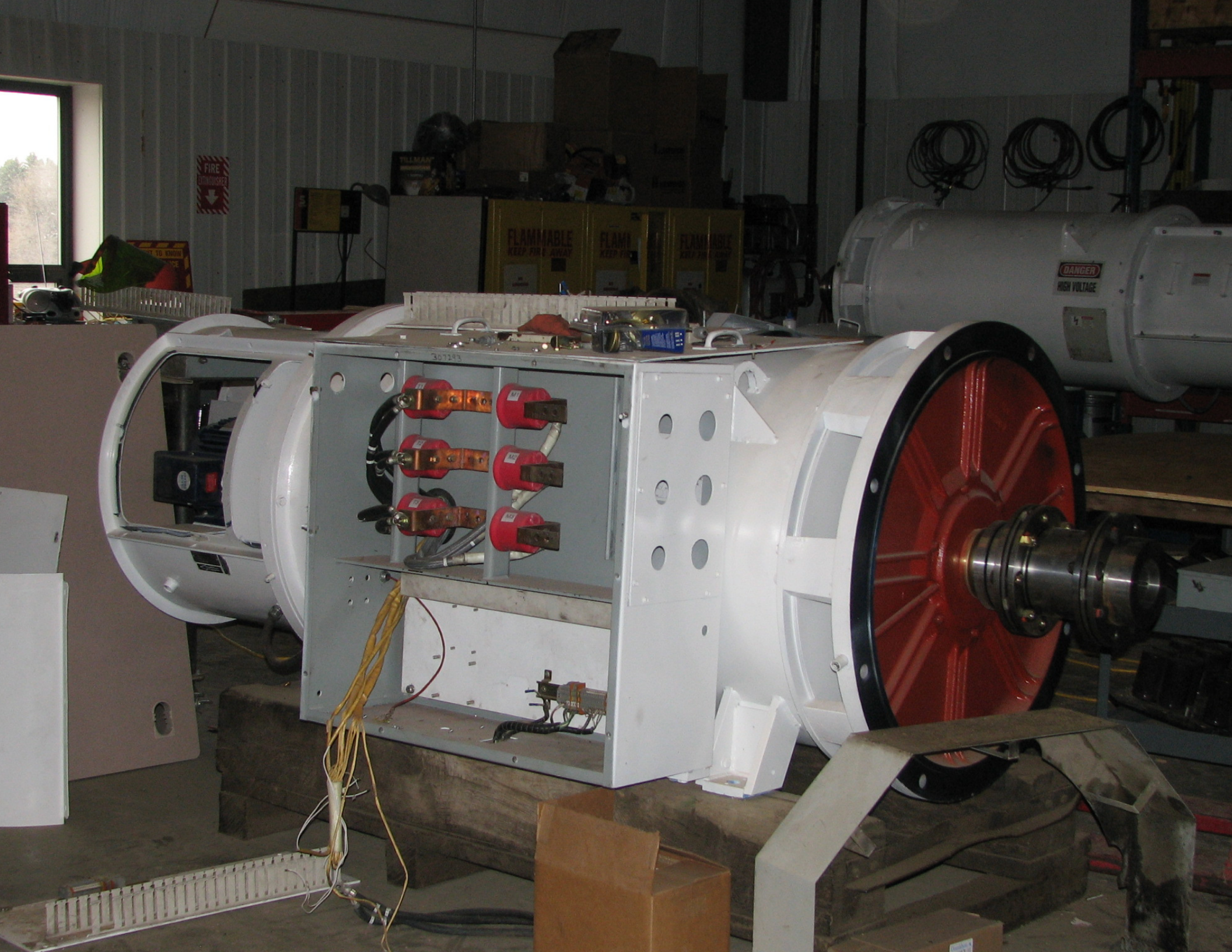

got wind?


got wind?
78Y VC1


TRAIL KING


WICHITA STATE
BLACK BEARS


WICHITA STATE


FIRE
EXTINGUISHER
FLAMMABLE
KEEP FIRE AWAY
DANGER
HIGH VOLTAGE


lenovo
Fenway WCS version 1.52m - [AES Storm Lake 2]
File Operate Maintenance Diagnostics Servers System
A022 40
A023 81
A024 107
A025
A026 72
A027 25
A028 108
A029
A030 60
A031 70
A032
A033
A041
A042 96
A043 98
A044 91
A045 98
A046 108
A047 33
A048 88
20.3
B001 68
B002 50
B003 125
B004 36
B005 90
B006 82
B007 121
B008 82
B009 92
B010 116
B011 55
B012 72
B013
B014 102
B015
B016 121
B017 72
B018 61
B019 113
B020 111
B021 88
B034 84
B035 65
B036
B037 96
B038
B039 55
B040 115
C049 65
C050 53
C051 100
C052 90
C053 92
C054 58
C055 66
C056
C057 34
C058 32
C059 2
C060 76
C061 64
C062
C063 90
C064 102
C065 108
C066 63
C072 48
C073
C074 57
C075 33
C076 94
C077 53
C078 78
C079 79
0.0
0.0
D067
D068
D069
D070
D071
D080 35
D081
D082 71
D083 41
D084 72
D085 53
D086 40
D087 43
D088 62
D089 29
D090 20
D091 67
D092 34
D093 2
D094
D095 72
D096 16
D097 11
D098 44
D099 53
D100 52
D101 115
D102 97
D103
D104 45
D105
D106 75
D107
Fenway AutoCall
Windfarm Status
Total Power 5.99 MW
Availability 93.46 %
Total Comm 86.92 %
Trigger Levels
Availability 85 %
Total Comm 80 %
Delay Time 90 m
Acknowledge / Re-Enable
Notification
Email Log
Outgoing (SMTP) Mail Server
192.168.105.201
Email Conditions (enable/disable)
Availability or Total Comm Trigger
Turbine Fault that requires action
Project Status Update 4 hrs
Email Addresses
1 5076491288@message.alltel.c
2 5076491275@message.alltel.c
3 tammy.conekin@aes.com
4 james.mora@aes.com
5
6
Email Test
Color/Priority
Crew
Safety
Lost Availability
Non-Loss
Test / Download
Alarm
Wind Shutdown
Warning
Comm Error
Parked
Startup
Online
AutoClear
Actions Delays
A031 ROTATION_ERROR 0000
C058 HYDR_UNDER_PRES_1 0000
Turbine A031
Primary Fault ROTATION_ERROR
AutoClear disabled
Other Faults no
Minutes 60
Fault Limit 3
Fault Count 1
Auto Decision Clear
Clear
O/S
Apr 02 2008 17:53:04 0 15436 K
Start
Wcs
5:53 PM

Spirit Lake Community Schools

First in the Nation Powered by Wind

Presented By
Jim Tirevold

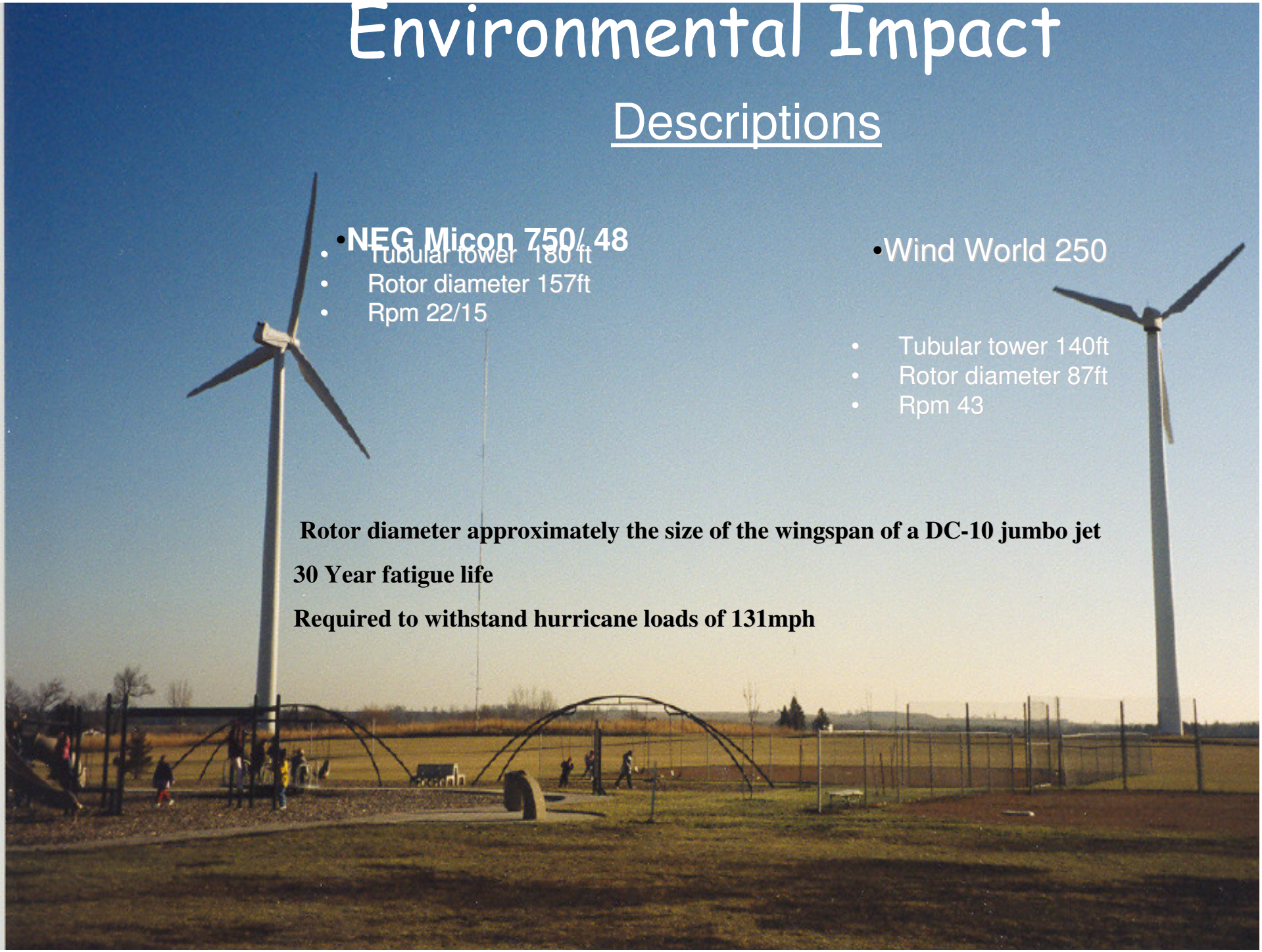

SPIRIT LAKE SCHOOLS
A001
Spirit Lake

Project Goals

- Provide energy for ALL district facilities & athletic fields: 1st in the Nation
- Educational Tool
- Economic Advantage
- Environmental Impact
- Wind World Operational July 20, 1993
- NEG Micon Operational October 29, 2001
- Geothermal 2002

Environmental Impact

Descriptions



- **NEG Micon 750/ 48**
  - Tubular tower 180 ft
  - Rotor diameter 157ft
  - Rpm 22/15

- Wind World 250
  - Tubular tower 140ft
  - Rotor diameter 87ft
  - Rpm 43

Rotor diameter approximately the size of the wingspan of a DC-10 jumbo jet

30 Year fatigue life

Required to withstand hurricane loads of 131mph

Educational Tool

Our first Grade class wrote a book about "Curious George and the Wind Turbine" with each child writing and drawing a page using a question they had as motivation. The students visited the turbines and researched the answers. See on Website

Our government class was invited to the state legislature to discuss implementation of wind energy for the Spirit Lake Schools

7th Grade Science Class: Alterative Energy Unit

Middle School Math: Using similar triangles to estimate the height of the wind turbines

Statistics Class: Use the monthly data for statistical analysis

Business: Determine cost savings, interest payments etc.

Speech Class: Persuasive speech concerning the pros (cons) of wind energy production

Computer Class: Design a web presence for school wind data

CAD/CAM: Design the wind turbine given its specifications

Art: Using perspective, vertical to horizontal proportions, drawing, lighting & shadows

Reading/Writing: Using the wind turbine as the subject of a writing assignment for different styles of writing such as Shakespearean, technical journal, etc

Economic Advantage

Contracts With Alliant Energy

NEG Micon 750/48

- Net billing
  - 8 meters will be allowed to offset production
- Direct grid connection
  - Connect to closest grid
- Excess production
  - Alliant energy will pay the district $.02 per kwh for excess energy which is equal to their avoided costs. Contract length = 20 years.

Wind World 250

- Net billing
- Connected to Elementary building
- Excess Production

-Alliant Energy will pay the district $.0602 for excess energy. Contract length = 33 years.

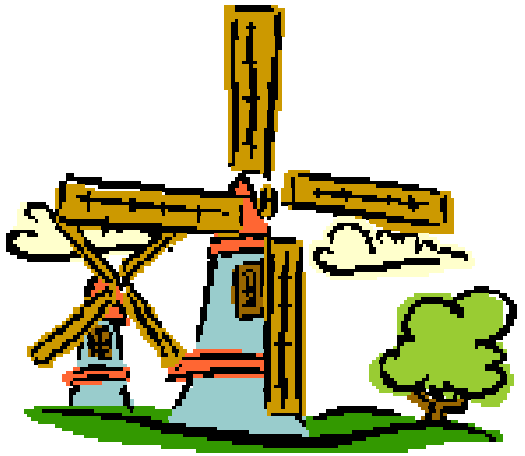
Energy bought from Alliant costs $.095 per kwh.

Economic Advantage

Annual KWH Production

- Micon 750/48
  - 1,405,762 kwh's yr
  - Total Production as of Feb 12, 2007 = 7,930,410 kwh's
- Wind World 250
  - 282,992 kwh's/yr
  - Total production to Feb 12, 2007
  - 3,781,242 kwh's

District Total
11,711,652 KWH's



Environmental Impact

Annual		Total
2,533,131 lbs.	Carbon Dioxide Emissions	17,567,478 lbs.
361,393 lbs.	Sulfur Oxide Emissions	2,506,293 lbs.
844	Tons of Coal	5855
2972	Barrels of Oil	20612
1541	Trees	10692

Economic Advantage

Financing the Turbines

NEG Micon 750/48

•$780,000 complete installation

- $250,000
  - Iowa Energy Center
    - No interest loan
- $530,000
  - Iowa DNR approved loan from commercial banks
    - Low interest loan 5.1%
- The money offset in energy costs each year will payoff the project in 6.5 years.

6.5-9 year payback

Wind World 250

$239,500 complete installation

- $119,000
  - U.S. Dept. of Energy Grant
- $120,500
  - Iowa DNR approved loan from commercial banks
- The money offset in energy costs each year paid off the project in 1998

8 to 9 year payback, actually 5½ years

•Both projects were totally self funded

•No other district funds were used

•1st in the Nation to Provide Own Electricity

Educational Dollars Safeguarded

Feb 2007

- NEG Micon 750/48
- Project $118,820 energy offset each year
- = $633,708
- principal & interest
- & District Income

- Wind World 250
- $23,207 energy offset each year
- Energy $ Saved $190,634

Total Projected Dollars Safeguarded by 2008 will be $142,027 Per Year

Economic Advantage

Spirit Lake Community School 6 Year Electrical Use Summary

	Wind Production	Metered Kwh's	Billed Units	Gross Billing	Billing Final	Wind Energy $
2000-2001	261107	1691226	1439527	$145,216	$123,741	$22041
2001-2002	1302041	1823516	521475	$148,114	$50,093	$98,020
2002-2003	1690168	2315049	624881	$194,816	$53,971	$140,845
2003-2004	1887006	2525989	636783	$200,710	$55,071	$145,638
2004-2005	1762165	2610657	848492	$228,175	$73,873	$154,302
2005-2006	1450860	2783869	1333009	$262,437	$128,599	$133,839

Spirit Lake Community School 6 year Natural Gas Summary

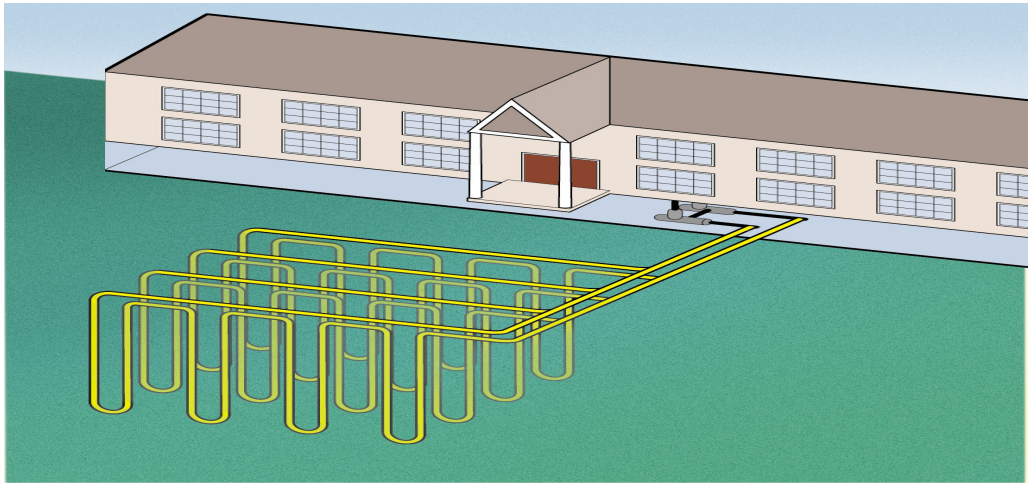
	CCF	Cost
2000-2001	123044	$48,005
2001-2002	142578	$70,333
2002-2003	128067	$81,907
2003-2004	122598	$88,734
2004-2005	118551	$111,882
2005-2006	98255	$129,066

Environmental Impact
Geothermal Energy

A **geothermal exchange heat pump**, also known as a **ground source heat pump** or **GSHP**, is a heat pump that uses the Earth as either a heat source, when operating in heating mode, or a heat sink when operating in cooling mode.

Can be used almost anywhere worldwide
Conserve Fossil Fuel Resources
Provide clean heating & cooling-no emissions from burning fuels
Uses electricity generated from Wind turbines
Operational 2002/ High School
One Giant Templifier vs. Many Heat Pumps
240 wells 200 feet deep

closed loop vertical system




FARMERS
COOP


MERIDIAN WAY
WIND FARM


EXIT
Wind Energy
Technology
Lab-Volt

Sterling High School
Wind for Schools Program

http://www.usd376.com/windproject/index.html

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whislerd@usd376.com